#### From the INTERNATIONAL BUREAU

**PCT** 

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL APPLICATION AS PUBLISHED OR REPUBLISHED To:

AOKI, Atsushi A. AOKI, ISHIDA & ASSOCIATES Toranomon 37 Mori Bldg. 5-1, Toranomon 3-chome Minato-ku Tokyo 1058423 JAPON

18, 4, 18

Date of mailing (day/month/year)
13 April 2006 (13.04.2006)

49

Applicant's or agent's file reference R628-PCT

**IMPORTANT NOTICE** 

International application No. PCT/JP2005/006716

International filing date (day/month/year) 30 March 2005 (30.03.2005)

Priority date (day/month/year)
31 March 2004 (31.03.2004)

**Applicant** 

THE YOKOHAMA RUBBER CO., LTD. et al

The International Bureau transmits herewith the following documents:

copy of the international application as published by the International Bureau on under No. WO

•

copy of international application as republished by the International Bureau on 13 April 2006 (13.04.2006) under No. WO 2005/096392

For an explanation as to the reason for this republication of the international application, reference is made to INID codes (15), (48) or (88) (as the case may be) on the front page of the attached document.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer

Yoshiko Kuwahara

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 90 90

### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau

(43) International Publication Date

13 October 2005 (13.10.2005)





PCT

# (10) International Publication Number WO 2005/096392 A3

- (51) International Patent Classification: H01G 9/20 (2006.01) H01M 14/00 (2006.01)
- (21) International Application Number:

PCT/JP2005/006716

- (22) International Filing Date: 30 March 2005 (30.03.2005)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

 2004-105439
 31 March 2004 (31.03.2004)
 JP

 2004-121735
 16 April 2004 (16.04.2004)
 JP

 2005-002587
 7 January 2005 (07.01.2005)
 JP

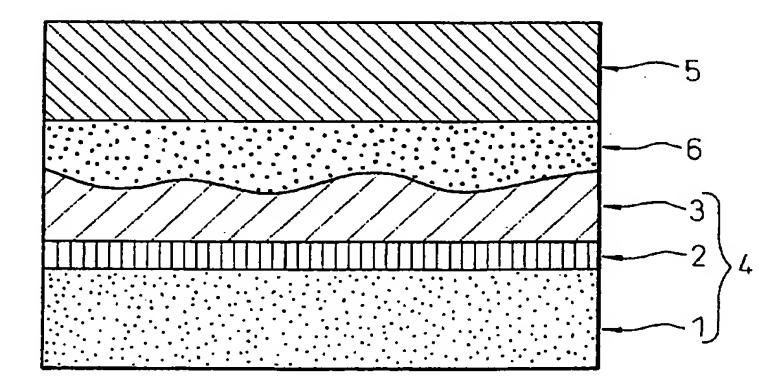
 2005-005332
 12 January 2005 (12.01.2005)
 JP

- (71) Applicant (for all designated States except US): THE YOKOHAMA RUBBER CO., LTD. [JP/JP]; 36-11, Shimbashi 5-chome, Minato-ku, Tokyo, 1058685 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MARUYAMA, Tsukasa [JP/JP]; c/o THE YOKOHAMA RUBBER CO., LTD., HIRATSUKA FACTORY, 2-1, Oiwake, Hiratsuka-shi, Kanagawa, 2548601 (JP). SEKINE, Yuko [JP/JP]; c/o THE YOKOHAMA RUBBER CO., LTD.,

- HIRATSUKA FACTORY, 2-1, Oiwake, Hiratsuka-shi, Kanagawa, 2548601 (JP).
- (74) Agents: AOKI, Atsushi et al.; Λ. AOKI, ISHIDA & AS-SOCIATES, Toranomon 37 Mori Bldg., 5-1, Toranomon 3-chome, Minato-ku, Tokyo 1058423 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ELECTROLYTE FOR PHOTOVOLTAIC DEVICE AS WELL AS PHOTOVOLTAIC DEVICE AND DYE-SENSITIZED SOLAR CELL INCLUDING THAT ELECTROLYTE



(57) Abstract: An electrolyte for a photovoltaic device including (i) a layered clay mineral and/or an organically modified layered clay mineral and (ii) an ionic liquid as well as a photovoltaic device including a photoelectrode including a transparent conducting layer and a metal oxide semiconductor mesoporous film using, as an electrolyte layer, the same, a counter electrode facing this photoelectrode and an electrolyte layer arranged between the photoelectrode and the counter electrode as well as a dye-sensitized solar cell composed of a photovoltaic device and a photosensitizer carried on a metal oxide semiconductor mesoporous film of the photovoltaic device, wherein the conductive substrate is obtained by coating, on a conductive substrate, a conductive polyaniline dispersion stably dispersed in an organic solvent including (A) a polyaniline obtained by polymerization of aniline or an aniline derivative, (B) a sulfonic acid compound and/or (C) an organic polymer having a protonic acid group, (D) a molecular weight modifier, and (E) an organic solvent capable of dissolving the sulfonic acid compound (B), the organic polymer having a protonic acid group (C), and the molecular weight modifier (D).



## WO 2005/096392 A3



#### **Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:

  13 April 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## INTERNATIONAL SEARCH REPORT

International Application No

T/JP2005/006716

A. CLASSIFICATION OF SUBJECT MATTER
H01G9/20 H01M14/00

According to International Patent Classification (IPC) or to both national classification and IPC

#### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) HO1G HO1L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Calegory °	Citation of document, with indication, where appropriate, of the	Relevant to claim No.			
X	CHEN H-W ET AL: "The novel por electrolyte nanocomposite composite				
Y	ISSN: 0032-3861 page 9764, column 1, line 23 -	line 34	1-5,9		
		-/			
X Furth	er documents are listed in the continuation of box C.	χ Patent family members are listed i	n annex.		
"A" docume consider the earlier of filing date which is citation other in the earlier of the ear	nt which may throw doubts on priority claim(s) or s cited to establish the publication date of another or other special reason (as specified) exhibition or	<ul> <li>'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</li> <li>'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</li> <li>'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</li> <li>'&amp;' document member of the same patent family</li> </ul>			
	rectual completion of the international search February 2006	Date of mailing of the international sea $10/02/2006$	rch report		
Name and m	eailing address of the ISA  European Patent Office, P.B. 5818 Patentlaan 2  NL - 2280 HV Rijswijk  Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  Fax: (+31-70) 340-3016	Authorized officer Pusch, C			

Form PCT/ISA/210 (second sheet) (January 2004)

#### INTERNATIONAL SEARCH REPORT

International Application No T/JP2005/006716

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Category ° 1-3 DOEFF M M ET AL: "Li ion conductors based X on laponite/poly(ethylene oxide) composites" SOLID STATE IONICS, NORTH HOLLAND PUB. COMPANY. AMSTERDAM, NL, vol. 113-115, 1 December 1998 (1998-12-01), pages 109-115, XP004153284 ISSN: 0167-2738 1-5,9page 110, line 1 - line 35 page 113, column 1, line 1 - line 9 1-3,5,9US 6 475 663 B1 (MOEHWALD HELMUT ET AL) 5 November 2002 (2002-11-05) column 4, line 20 - line 29 column 36, line 34 - line 44 1-3,5,9WO 03/054894 A (SONY INTERNATIONAL GMBH; SONY CORPORATION; NELLES, GABRIELE; MITEVA,) 3 July 2003 (2003-07-03) page 8, line 22 - line 31 page 3, line 12 - line 15 FR 2 841 255 A (INSTITUT NATIONAL Α POLYTECHNIQUE DE GRENOBLE) 26 December 2003 (2003-12-26) page 1, line 35 - line 39 page 3, line 18 - line 24 page 13, lines 3-5 page 14, line 24 - line 29 WO 2004/017452 A1 (BRDGESTONE CORPORATION X TOKYO) 26 February 2004 (2004-02-26) paragraphs '0016!, '0036!, '0151!; figure 4 -& EP 1 536 508 A (BRIDGESTONE E CORPORATION) 1 June 2005 (2005-06-01) EP 1 164 603 A (FUJI PHOTO FILM CO., LTD) 19 December 2001 (2001-12-19) paragraph '0083! EP 1 339 127 A (DAINIPPON INK AND CHEMICALS, INC) 27 August 2003 (2003-08-27) paragraph '0056! PATENT ABSTRACTS OF JAPAN vol. 011, no. 312 (E-548), 12 October 1987 (1987-10-12) & JP 62 105378 A (HITACHI LTD), 15 May 1987 (1987-05-15) abstract

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/JP2005/006716

	atent document d in search report		Publication date		Patent family member(s)		Publication date
US	6475663	B1	05-11-2002	AU	5420699	A	28-02-2000
		•		CA	2339617	* –	17-02-2000
				DE	19835615		10-02-2000
		•		MO	0008068	_	17-02-2000
				EP	1109841		27-06-2001
				ES	2176017	•	16-11-2002
				JP	2002522872	•	23-07-2002
	· 			TW 	480757	B	21-03-2002
WO	03054894	Α	03-07-2003	AU	2002358761	· - <del>-</del>	09-07-2003
				CA	2471162		03-07-2003
				CN	1606788		13-04-2005
	•			JP	2005513728	_	12-05-2005
				US. 	2005028862	A1 	10-02-2005
FR	2841255	·A	26-12-2003	AU	2003258822		06-01-2004
				CA	2489582		31-12-2003
				CN	1675792		28-09-2005
	•			EP	1520318	· - <del>-</del>	06-04-2005
ě				WO	2004001888	• • -	31-12-2003
	***************************************			JP 	2005530882	T 	13-10-2005
WO	2004017452	<b>A1</b>	26-02-2004	AU	2003254820	••	03-03-2004
•			•	EP	1536508		01-06-2005
				US 	2005260786	A1	24-11-2005
EP	1536508	Α	01-06-2005	AU	2003254820		03-03-2004
				WO	2004017452	-	26-02-2004
				US 	2005260786	A1	24-11-2005
EP	1164603	Α	19-12-2001	JP	2002075470	Α	15-03-2002
EP	1339127	A	27-08-2003	CA	2427082		15-04-2003
		<del></del>	۔ وہ ان	WO	0235636	A1	02-05-2002
10	62105378	Α	15-05-1987	NONE			Ţ.